DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

BETHESDA 14, MD.

NATIONAL INSTITUTES OF HEALTH

October 20, 1958

AIR MAIL

Professor J. Lederberg
Department of Genetics
University of Wisconsin
Madison 6, Wisconsin

Dear Dr. Lederberg:

Please find enclosed 4 reprints; 2 more are to appear this year (they are Dr. Fahey's). The subject of the latter is a second plasma cell neoplasm X5647. I have written an extra guide table on the back of the Proc Soc paper for orientation.

In answer to your questions:

We have tested mice bearing X5563 for their ability to make sheep red blood cell hemolysin. They can do this when the tumor is small, around 2 grams. After it attains a size of 4 grams, the animals only weakly, if at all, form antibody. Pools of sera from mice bearing X5563, (2 gram size) immunized against sheep Rbc make both myeloma protein and hemolysin. Block electrophoresis has revealed both to be Y mobility proteins with slightly different peaks. This is the unpublished work of Drs. Faulconer Smith, John Fahey and myself. We are not equipped to exhaustively determine whether the myeloma protein is, in fact, an antibody against some pathogenic intestinal organism of the mouse.

In regards to the induction of plasma cell neoplasms:

We have no simple method and I have only recently begun experiments on this question. Since these neoplasms appear in aged mice, as a rule, and since many are difficult to transplant, the technical problem seems, at this time, to be quite tedious. My plans are, however, to proceed. The underlying principle is to inject adjuvants, antigen and methylcholanthrene in regions where plasma cells might be expected to develop. By knowing the antigen, if neoplasms are obtained, determine if the protein possesses antibody activity.

Mice are difficult animals to work with in regards to routine serological technique. I am very much attracted to the type of experiment you and Dr. Nossal have done, for it deals directly with the cell. I am very much interested in the cellular basis of antibody

formation and I do not believe a good understanding of this problem is available. I think that a reticular cell may heteroplastically give rise to the antibody forming apparatus, and that both lymphocytes and plasma cells, and even macrophages, all participate. I would speculate antibody may be bound in cells (lymphocytes) or be elaborated by cells (plasma cells).

Dr. Ragna Rask-Nielson, Universitetets Bio Kemiske Institut, Juliane Maries Vej 30, Copenhagen, Denmark, has the largest collection of plasma cell neoplasms. Hers differ from ours in that they are leukemias. She has recently shown several form protein substances. She might be able to give you some ideas on how to induce such neoplasms. We are always reluctant to import mice because of the danger of ectromelia.

I think one should approach this problem in its broadest aspect and study lymphocytic neoplasms as well as plasma cell neoplasms. We have in our laboratory a wide variety of reticular neoplasms of the mouse which we maintain in transplant. If you or Dr. Nossal would like to pursue this problem further, I should greatly appreciate discussing the plasma cell neoplasms, our plans, the methods of induction, etc. Is Dr. Nossal in the U.S.? Would he consider paying us a visit?*

In regards to the availability of our neoplasms, I should be delighted to place them at your disposal. You will need a colony of C3H/He, C3HY/Lw, C3Hf/He or C3H/He CRGL mice to maintain the neoplasms.

Sincerely,

Michael Potter

Michael Potter, M.D.
Leukemia-Studies Section
National Cancer Institute

* Or if course, yourself